Grade 9 Mathematics

Unit 2:   Powers and Exponent Rules

Sec 2.1   What is a Power

2^5 2 is the BASE

               5 is the EXPONENT

     The entire 2^5 is called a POWER

2^5 = 2 × 2 × 2 × 2× 2 written as repeated multiplication.

2^5 = 32   written in standard form.

2^5 =   2 × 2 × 2 × 2× 2   =   32

Power   Repeated   Standard
                 Multiplication   Form

To evaluate a power means to find the answer in standard form.

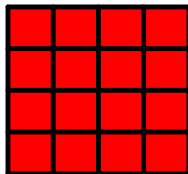Are the base and the exponent interchangeable? In other words, does $2^5 = 5^2$?

$2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$ $5^2 = 5 \times 5 = 25$

• No, the base and exponent cannot be switched and still be equal.

CHALLENGE!!!!   Can you think of one example where the base and exponent can be switched, and the answers are still equal?
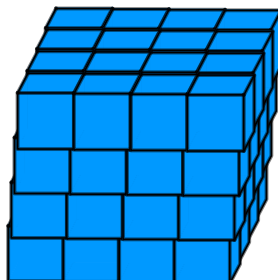

4^2 When you have an exponent of 2, it is called a squared number.

$4^2 = 4 \times 4 = 16$

4^3 When you have an exponent of 3, it is called a cubed number.

$4^3 = 4 \times 4 \times 4 = 64$

The Importance of Brackets

$(-3)^2$ The brackets tell us that the base is -3.

$$(-3)^2 \;=\; (-3) \times (-3) = +9$$

When there is an EVEN NUMBER of negatives then the product is POSITIVE.

$$(-3)^3 \;=\; (-3) \times (-3) \times (-3) = -9$$

When there is an ODD NUMBER of negatives then the product is NEGATIVE.

-3^2 There are no brackets so the base is 3.

The negative applies to the whole expression.

$$-3^2 \;=\; ?$$

Try these:
1. Identify the base and evaluate each power.

a). $(-5)^4$

b). -5^4

c). $-(-5)^4$

d). $(-5)^3$

e). -5^3

f). $-(-5)^3$

Complete the following:
p.55 # 4,5,7,8,9,10
p.56 # 11,12,13,14,16
p.57 # 18,20

Matching Activity